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14 Creekwood Court
Danville, CA 94526
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U. S. Department of Transportation (DOT)
Office of Dockets and Media Management
Room PL-401
400 7th Street, S.W.,
Washington, DC 20590

FAA-03-14951-11

CERTIFIED MAIL - RETURN RECEIPT

SUBJECT : Second Amendment to Request for Reconsideration

This is a second amendment to my request for reconsideration of the FAA response to my Paperwork Reduction and Data Quality Act complaint filed January 15, 2003, assigned DOT Docket No. FAA-2003-14951-1 on April 15, 2003. This complaint requested, *inter alia*, that the FAA remove all four of its Senate Appropriations Committee's directed reports from its CAMI website and post in their place an explanation of their flawed results and the reason for their removal, and to disavow an earlier analysis commonly known as the Golaszewski Fight Time Study.

The purpose of this additional amendment is to update the complaint, the initial request for reconsideration and the amended request by:

1 advising of the FAA's recent citation to and reliance on the methodologically flawed, 4-part CAMI and Golaszewski studies in the then pending regulatory action identified in my first amended request for reconsideration; and

2 advising of serious failures of management and oversight in the preparation of the 4-part CAMI reports as revealed in a FAA response to my FOIA request for information regarding that study.

FAA Violates OMB Defined DQAct Standards When Denying the PPF Petition for Exemptions from 14 CFR § 121.383(c).

On June 10, 2002, the Professional Pilots Federation filed a petition for exemptions from the prohibition of 14 C.F.R. § 121.383(c), the so-called age 60 rule, on behalf of Dallas E. Butler and nine other members of that organization. On September 6, 2003, FAA denied the petitioned for exemptions, stating:

> ... [T]he FAA has posted four reports concerning Age 60 on its website at the address: http://www.cami.jccb.gov/aam-400A/AGC60/60_index.html. These reports were created in part in response to the U.S. Senate Committee on Appropriations order to study the Age 60 Rule in a year 2000 appropriations bill. ... Petitioners criticize the method of analysis used in the fourth report, however, the FAA conducted the study pursuant to the direction of the Appropriations Committee and the results of that study showed an increasing risk for pilots over the age of 60.[1]

In now denying the petitioned for exemptions, the FAA: 1) ignores the OMB defined DQAct data quality standards; 2) relies, instead, on prior court decisions rendered under the highly deferential arbitrary and capricious, abuse of discretion standards of review set forth in the Administrative Procedures Act (APA) to validate its scientific arguments; and 3) cites to the Senate's Appropriations Committee "order" as evidence of the validity of the "method of analysis" followed in its studies.

And further, the agency admits but excuses the methodological flaws - again on the judiciary's deferential review under the APA - to defend and rely on these invalid results.

> ... In both cases [referencing Yetman v. Garvey, 261 F.3d 664, 678 (7th Cir. 2001) and Baker v FAA, 917 F.2d 318 (7th Cir. 1990).], the Seventh Circuit recognized that the Flight Time Study was not perfect, but ultimately upheld the FAA's decision to deny petitions for exemption and upheld the use of the Flight Time Study as substantial evidence supporting the validity of the Age 60 rule.[2]

By these additional statements the FAA reveals that, *in this regulatory context*, it admits of the *methodological* flaws inherent in the Golaszewski (and thus CAMI) studies, but chooses to rely on the *results* to support its false claims of a statistically significant increase in risk of accident for pilots age 60 and above.

While the FAA may have justifiably invoked, and the courts properly relied upon, the APA's deferential standards for science-based claims in these prior actions (*e.g.*, Baker decided in 1990 and Yetman in 2001)[3], they are not the appropriate standards for agency

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1 Denial of Exemption, issued October 6, 2003, Regulatory Docket No. FAA-2002-12501, at 11.

2 *Id*, at 11-12.

3 At pages 7 and 10 (Footnote 14) of the FAA's petition denial, FAA cites to ten additional court decisions as support for its "basis [for] the rule." None were upheld on the basis of validated science, but rather under the APA's deferential standards of review. Moreover, all before Aman v FAA (1988) were upheld not on statistical arguments, but rather on claims of safety being compromised by medical uncertainties, all of which were thoroughly discredited

conduct applicable today. Whether merely disseminating to the public or relying upon scientific materials[4] in its regulatory capacity, *current* standards require that the FAA adhere to the OMB's DQAct guidelines for scientific, including statistical, evidence.

> We note, in the scientific context, that in 1996 the Congress, for health decisions under the Safe Drinking Water Act, adopted a basic standard of quality for the use of science in agency decisionmaking. Under 42 U.S.C. 300g-1(b)(3)(A), *an agency is directed, "to the degree that an Agency action is based on science." to use "(1) the best available, peer-reviewed science and supporting studies conducted in accordance with sound and objective scientific practices; ..."*[5]
> [Emphasis - italics - added.]

The OMB agency-wide DQAct guidelines require that the FAA apply these Safe Drinking Water Act quality standards in its regulatory activities involving aviation safety and risk assessments.

> ... Under 42 U.S.C. 300g-1(b)(3)(B), the agency is directed, "to ensure that the presentation of information [risk] effects is comprehensive, informative, and understandable." The agency is further directed, "in a document made available to the public in support of a regulation [to] specify, to the extent practicable -- (i) each population addressed by any estimate [of applicable risk effects]; (ii) the expected risk or central estimate of risk for the specific populations [affected]; (iii) each appropriate upper-bound or lower-bound estimate of risk; (iv) each significant uncertainty identified in the process of the assessment of [risk] effects and the studies that would assist in resolving the uncertainty; and (v) peer-reviewed studies known to the [agency] that support, are directly relevant to, or fail to support any estimate of [risk] effects and the methodology used to reconcile inconsistencies in the scientific data."

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in the Congressionally mandated reports of the IOM and NIA Panel on the Experienced Pilots Study.

IOM Report: Airline Pilot Age, Health and Performance: Scientific and Medical Considerations, Report of a Study by the Committee to Study Scientific Evidence Relevant to Mandatory Age Retirement for Airline Pilots, Division of Health Sciences Policy, Institute of Medicine, National Academy of Science, Washington, D.C., March 1981.

NIA Report: Report of the National Institute on Aging Panel on the Experienced Pilots Study, Department of Health and Human Services, NIH, NIA, Bethesda, Md. 20205, August, 1981.

[4] Includes, for illustration, both the self-generated, four CAMI Reports and the 1983 contractor-produced Golaszewski Flight Time Study. *See also*: OMB Final Guidelines, at 8454.

[5] *Id.*, 8457.

> *As suggested in several comments, we have included these congressional standards directly in new paragraph V.3.b.ii.C, and made them applicable to the information disseminated by all the agencies subject to these guidelines:*
> ...
> [Emphasis - italics - added.]

And further, these standards apply for all materials *currently* disseminated and relied upon, irrespective of when initially produced or disseminated.

> The agency's administrative mechanisms, under paragraph III.3. [allowing affected persons to seek and obtain appropriate and timely corrections], shall apply to information that the agency disseminates on or after October 1, 2002, *regardless of when the agency first disseminated the information.*[6]
> [Emphasis - italics - added.]

That the methodology used by the FAA in these CAMI Reports was directed by the Senate Appropriations Committee is irrelevant. Neither the 1983 Golaszewski Flight Time Study nor any of the recent Appropriation Committee directed, four CAMI Reports satisfy these Safe Drinking Water Act - thus OMB DQAct adopted - standards.

Thus the FAA's public dissemination of the fundamentally flawed and misleading CAMI "statistical" products on its website, and its reliance on those flawed products in its denial of the PPF petition for exemptions are both inappropriate.[7]

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[6] OMB Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies, Section III.4. 67 Fed.Reg. 8452, 8458. February 22, 2003.

[7] With the exception of the 1993 Kay, *et.al.*, Age 60 Project, Consolidated Database Experiments, Final Report, Hilton Systems Technical Report 8025-3C(R2): CAMI Contract No. DTFA-02-90-90125, every so-called statistical analysis of age vs risk of aviation accident performed by or for the FAA is equally invalid. Examples:

- Page, E., *et al.*, Medical Risk Assessment and the Age 60 Rule for Airline Pilots, (Letter Memorandum), Office of Technology Assessment, U.S. Congress, September, 1990.
- Mortimer, R., Some factors associated with Pilot age in general aviation crashes. Paper presented at the 6th annual symposium on aviation psychology, Columbus, OH. April-May, 1991.
- Yakimovich, *et al.* CogScreen as a predictor of flight performance in Russian pilots , Presentation, 65th annual meeting of the Aerospace Medical Association, San Antonio, TX. May, 1994.
- Golaszewski, R.S., General Aviation Safety Studies: Preliminary Analysis of Pilot Proficiency, Abacus Technology Corp., in association with Gellman Research Associates, Inc., Chevy Chase, MD, Contract No. DTFA-01-90-Y-01023. December 20, 1991.

Recent FOIA Responses Reveal Serious Management and Oversight Failures in the Preparation of the Four CAMI Reports.

The FAA's four CAMI Reports declare that they were prepared under the FAA-Civil Aeromedical Institute OAM research task AAM-00-A-HRR-520. On February 17, 2003, I, as an individual and as Age60Rule.com, requested under the FOIA, *inter alia*:

> 4. all other materials related to the origin, establishment, execution -- including interim progress reports, if any -- and final approval(s) for each of the four reports produced under FAA-Civil Aeromedical Institute OAM research task AAM-00-A-HRR-520, including:
>
> description of the scope/objective(s) of the work to be performed under this research task, and any, if any, restrictions thereon,
>
> documents regarding the selection and assignment of key personnel, including those of technical supervisor(s) and of principal investigator(s)/author(s),
>
> all cost data, including initial cost estimates, cost limitations (if any), final cost determinations, and account number(s) to which these dollars were charged, ...[8]

In a reply dated June 19, 2003 (copy attached), Melchor Antuñano, M.D., Director, CAMI:[9]

- provided a copy of the Aeromedical Research Resume (ARR) for the OAM research task AAM-00-A-HRR-520; but
- failed to identify which "parts" of the 4-part CAMI Reports were Appropriations Committee related and which parts were not; [*Note*: Both the reports, themselves and the FAA denial of petition declare that the CAMI reports were prepared "in part" in response to the Committee directive.]
- ignored the request for information on the origin, establishment, execution and final approval(s) for each of the four CAMI reports;
- denied the existence of any interim progress reports for the four Reports;
- failed to provide a description of the scope/objectives of the work as ordered, and any restrictions thereon;

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[8] Letter (FOIA Request) Samuel D. Woolsey (on Age60Rule.com letterhead) to Marion C. Blakey, Administrator, Federal Aviation Administration, CERTIFIED MAIL, RETURN RECEIPT, dated February 17, 2003. Subject: FOIA Request. Receipt acknowledged 2/26. Assigned FOIA control number #2003-003949CA

[9] Letter, Melchor Antuñano, M.D., Director, CAMI to Samuel D. Woolsey dtd. June 19, 2003. Subject: Response to FOIA Request #2003-003949CA.

- denied the existence of any record as to the selection or assignment of individuals to perform the four analyses; and
- declared there to be no separate cost accounting for these research tasks.

No portion of this Aeromedical Research Resume (copy attached) is related to the purpose or subject of the four CAMI Reports. This ARR's defined objectives are directed exclusively at general aviation activities, not to commercial aviation or age-based research or analyses, and certainly not to air carrier pilots subject to the age 60 rule.[10] The focus of the ARR is on laboratory and simulated flight projects for prospective application, not statistical analyses of retrospective data. No mention is made in the ARR of the Senate Appropriations Committee directive, or to any professional pilot group or activity directly or indirectly related to the subject matter of these four CAMI Reports, or to the analytical protocol followed in Reports 3 and 4. The CAMI Director attempts to explain away these omissions by describing the 4-part study as a "pop up" activity.

> ... The focus of [research task HRR-520] was on flight deck human factors. The Congressional requirement for a study of accident rates in relation to pilot age fell within the overall scope of the research task and was treated as a pop-up activity.

and:

> The reports themselves describe the procedures, analysis, and outcomes in sufficient detail to recreate the studies in accordance with generally accepted scientific practice.[11]

This FOIA reply by the CAMI Director thus reveals (suggests) that the FAA (CAMI):

- makes no distinction between the Appropriations Committee directed part(s) of the four CAMI Reports and its apparently self-initiated, non-Committee directed part(s);

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[10] The relevant statements of research objective set forth in this ARR are:

> This ARR concerns an approach to providing a scientific basis for the FAA and *the GA [general aviation] industry* to ascertain and develop initiatives *that will result in the improvement of general aviation safety.*

and:

> This ARR includes a multi-task approach to meeting the research objectives noted above. Many of these tasks involve *laboratory research and simulation to investigate specific factors and conditions*, which are felt to impact *GA pilot performance.*
> [Emphasis - italics - added.]

[11] *Id.*, at p. 2.

- had no defined plan or objective for either the Appropriation Committee's "part" of the studies or the "other (unidentified) part";
- can not (will not) distinguish between the Appropriations Committee directed and its own self-initiated part(s);
- tagged the Committee's directed work and the additional undirected work onto the most convenient task order, not the most relevant;
- made no definite work, personnel, or duty assignments for any of the work;
- provided no guidance to or oversight on the investigators;
- kept no work (time) or expense records; and
- denies any contact with the Appropriations Committee regarding either the quality or delivery of their final product.

This statement further reveals that both the FAA (CAMI) and the principal investigator(s) ignored the fundamental methodological flaws underlying the protocol as ordered and executed - a single risk profile from a heterogeneous mass of pilots demographically skewed at age 60 by the age 60 rule.[12] Given the clear indicia of statistical expertise evident in the author's extensive discussions and detailed explanations in Reports 2, 3, and 4, it is not credible to either assert or believe that these omissions were inadvertent.[13] The use of a single risk profile for a heterogeneous

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[12] *See* Footnotes 83-84 and associated text of my original complaint dated January 15, 2003.

See also Footnotes 8-10 and accompanying text in my initial request for reconsideration of October 10, 2003.

[13] Two examples:

At one point in each of Reports 3 and 4 (e.g., pp. 14-15, Report 4), the lead author explains the inappropriateness of overlapping age brackets as directed by the Appropriations Committee.

At another point in each of Reports 3 and 4 (*e.g.*, p. 20, Report 4), Broach admits - with neither example, estimate, or justification - of one confounding issue - private (recreational) flight hours added to the professional (for hire) flight hours in the denominators of the rate equations. But the admission is specious. As Kay (1993 Consolidated Database Studies, Table B-6A) reports, active air carrier pilots fly in excess of 700 hours/year, with total annualized hours averaging over 10 million flight hours for each 5-year aged group (Table B-6B). For medical Class II pilots (proxy for non-air carrier commercial pilots) the average annualized flight hours exceeds 20 million for each 5-year age group (Table B-7B). Amid numbers like these, the inflation of denominator values by recreational flight hours by these professional pilots can only be miniscule.

Moreover, Broach appears to equate all hours flown under Part 91 as general aviation flight. The assumption is incorrect. Commercial (for hire) flight hours not flown in common

population demographically skewed at age 60 by the age 60 rule to support the age 60 rule represents circular reasoning of the first order.[14] The more plausible explanation is that FAA deviated from accepted scientific (statistical) procedure and the OMB DQAct guidelines in a manner designed to ensure a preordained outcome.

Thus, the CAMI Director's assertion that

> ... [t]he reports themselves describe the procedures, analysis, and outcomes in sufficient detail to recreate the studies in accordance with generally accepted scientific practice.

appears disingenuous. Or further evidence of a failure in FAA/CAMI managerial supervision and oversight. Or - and more likely given the totality of the circumstances - a purposeful reluctance to subject its product to peer review for validation.

> ... [S]ubmission to the scrutiny of the scientific community is a component of "good science," in part because it increases the likelihood that substantive flaws in methodology will be detected.[15]

The necessary standard for valid scientific evidence, of course, is relevance and reliability. Particularly for evidence of integrity and credibility in the regulatory context, this admissibility focus must be first on principles and methodology, not on the conclusions that their efforts generate.[16]

The FAA's (CAMI's) failure/refusal to internally define the task assigned, to provide supervision in their manufacture, to submit their results to even cursory peer review, and to document any part of the process that generated these four CAMI Reports can not be excused, or tolerated. The FAA must be ordered to remove from public dissemination, and to cease and desist in its regulatory reliance on, these four CAMI Reports, as well as all prior statistical analyses that pursue the same or similarly flawed methodologies, including, but not limited to the 1983 Golaszewski Flight Time Study.

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carriage - e.g., corporate, test, ferry, law enforcement, fire suppression, traffic reporting, pipeline survey, etc. - are flown and reported under part 91.

[14] *See* Flue-Cured Tobacco Co-Op v. U.S.E.P.A., 4 F.Supp.2d 435, 456 (M.D.N.C. 1998):

> ... [EPA's] methodology allowed EPA to demonstrate a statistically significant association between ETS exposure and lung cancer. ... [This methodology] rests on the validity of the biological plausibility theory. It is circular for EPA to now argue the epidemiology studies support the Agency's *a priori* theory.

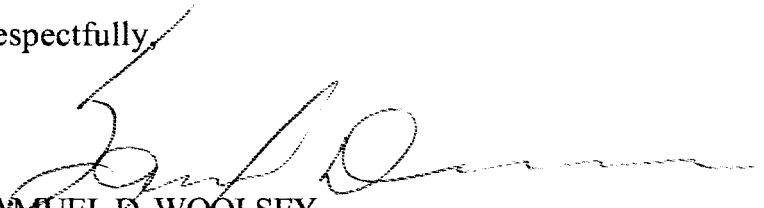
[15] Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 578, 593 (1993) discussing Rule 702, Federal Rules of Evidence.

[16] *Id.*, at 595.

Conclusion

As requested in my original DQAct complaint, the FAA must, either on its own or be required to, recall and repudiate these four CAMI Reports, the 1983 Golaszewski Flight Time Study, and all its other so-called statistical analyses that pursue the same or similarly flawed methodologies. Further, the agency must, either on its own or be required to, cease and desist in its reliance on any of these so-called statistical analyses in any of its regulatory functions. If the FAA cannot or is unwilling to do so, its authority and responsibility over these scientific (statistical) endeavors and regulatory matters must be revoked or suspended until it can - or will.

Respectfully,



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Enclosures:

Denial of Exemption, Regulatory Docket No. FAA-2002-12501.

Letter (FOIA Request) Samuel D. Woolsey (on Age60Rule.com letterhead) to Marion C. Blakey, Administrator, Federal Aviation Administration dtd. February 17, 2003.

Letter, Melchor Antuñano, M.D., Director, CAMI to Samuel D. Woolsey dtd. June 19, 2003.

Aeromedical Research Resume (ARR) for the OAM research task AAM-00-A-HRR-520.

Copy:

John D. Graham, Administrator, Office of Information and Regulatory Affairs, OMB.

Exemption No. 8141

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, DC 20591

In the matter of the petition of	
BUTLER, DALLAS E. ET AL	Regulatory Docket No. FAA-2002-12501
for an exemption from §121.383(c) of Title 14, Code of Federal Regulations	

DENIAL OF EXEMPTION

By petition received on June 13, 2002, Mr. Anthony P. X. Bothwell, Esquire, Attorney for Petitioners, 100 First Street, Suite 100 PMB241, San Francisco, California 94105-2632, petitioned the Federal Aviation Administration (FAA) on behalf of Dallas E. Butler et al for an exemption from § 121.383(c) of Title 14, Code of Federal Regulations (14 CFR). The proposed exemption, if granted, would permit the petitioners to act as pilots in operations conducted under part 121 after reaching their 60th birthdays.

The petitioners request relief from the following regulation:

Section 121.383(c) prescribes, in pertinent part, that no person may serve as a pilot on an airplane engaged in operations under this part if that person has reached his 60th birthday.

The petitioners support their request with the following information:

The petitioners claim the Age 60 rule has no medical or safety basis, instead, petitioners assert the Age 60 rule was originally adopted as an act of favoritism and continues to be supported by the FAA as an economic favor to the airline industry. Petitioners allege the FAA has intentionally misrepresented the justification for the Age 60 rule to the public, Congress, Federal courts, and other executive agencies. Petitioners claim they are entitled to be exempt from the Age 60 rule because the rule has no medical or safety basis and, therefore, granting them an exemption to the rule will not adversely affect safety.

AFS-02-463

Petitioners allege prior to the issuance of the Age 60 rule in 1959 there was no medical or safety basis for the rule. Petitioners allege the true purpose for the Age 60 rule was a personal favor between FAA Administrator Elwood Quesada and American Airlines Chairman C.R. Smith.

Petitioners claim that the Age 60 rule was adopted because American Airlines Chairman Smith contacted Administrator Quesada to request the FAA adopt a mandatory retirement rule to settle an ongoing pilot strike.

Petitioners assert the FAA continues to enforce the Age 60 rule so that airline companies will not be burdened with any administrative costs that may be associated with having to change retirement policies currently based on the age of 60. Petitioners cite correspondence between a former Federal Air Surgeon and a former FAA employee and a closed meeting between a congressman and FAA officials as evidence of this economic conspiracy.

Petitioners allege the FAA intentionally insulated itself from independent administrative review by adopting the Age 60 rule as an operational restriction under section 601 of the Federal Aviation Act of 1958 (now codified at 49 U.S.C. § 44701). Petitioners allege the FAA purposefully did not locate the Age 60 rule under section 602 of the 1958 FAA Act (now principally codified at 49 U.S.C. § 44703) as a licensing restriction that would be reviewed by the National Transportation Safety Board.

Among the many allegations leveled by the petitioners against the FAA are the following concerning studies in support of the Age 60 rule: the FAA continues to intentionally and purposefully fabricate and disseminate false and misleading data to support the rule and the FAA distorted data and endorsed and promoted flawed studies to support the rule; the FAA has ignored expert panel reports that disprove medical arguments supporting the rule; the FAA has refused to collect data, make data available that has been collected, or analyze data that has been collected that would undermine the Age 60 rule. Petitioners contend the FAA's reliance on one particular allegedly flawed study in support of the Age 60 rule, the Flight Time Study, conducted by Richard Golaszewski, constitutes intentional misrepresentation by the FAA to Congress and the U.S. Court of Appeals for the Seventh Circuit. Finally, petitioners allege the U.S. Senate Committee on Appropriations ordered the FAA to conduct a study in a 2000 appropriations bill. The petitioners allege that there is "evidence of the FAA's intent – perhaps even its complicity with the [Senate Appropriations] Committee – to mislead."[1]

Petitioners allege pilot incapacitation poses no threat to safety in air operations and therefore there is no justification for the FAA "no exemptions" policy regarding the Age 60 rule.

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[1] *See* Petition at 35.

Petitioners claim two systems that prevent accidents when there is an incapacitation are the manual lock shoulder harness and the two-communication rule. According to petitioners, even though pilots have died on the job, not a single air carrier accident has been reported in the literature as caused by pilot incapacitation since the two-communication rule and the manual lock shoulder harness were adopted by industry in the early 1970s. Petitioners also cited studies which compute the risk of pilot cardiovascular failure at 1 in 20.8 million flight hours and a risk of accident in multiple crew air carrier flight operations to be 1 in 8.3 billion flight hours. Petitioners allege the FAA has ignored this factual record which proves that pilot incapacitation in air carrier operations poses no risk to safety.

Petitioners allege when the FAA considers granting exemptions to the Age 60 rule, it does not consider that performance and medical checks eliminate at-risk pilots. Petitioners claim one such performance check is the multiple crew system where a back-up pilot can fly the aircraft if a PIC becomes incapacitated. Petitioners contend the FAA recognized the effectiveness of multiple or back-up pilots in airline operations during congressional testimony and in a 1969 study co-authored by former Federal Air Surgeon P.V. Siegel.

In addition, petitioners claim the FAA has never denied its ability to diagnose illness in older individuals and to be able to identify pilots that are unfit for duty. Petitioners claim the FAA has also recognized the superior health and fitness of airline pilots as compared to the general U.S. population.

Petitioners also assert that the FAA did not enforce the Age 60 rule against foreign pilots flying into the United States until 15 years after the International Civil Aviation Organization adopted the Age 60 rule. Petitioners claim the granting of these waivers is additional evidence of the FAA's true purpose of the Age 60 rule, airline scheduling and economics.

Petitioners also claim that because the Age 60 rule has no safety basis, the rule is inherently discriminatory and, therefore, violates the Age Discrimination in Employment Act (ADEA). Petitioners claim this argument is distinct from past claims of age discrimination because past claims did not argue the rule has no safety basis, past claims argued even if the rule was based on safety, it violated the ADEA.

Petitioners claim the FAA's rigid enforcement of the Age 60 rule forces airlines to aggressively recruit military pilots, thus creating a shortage of military pilots. Relaxing the FAA's no-exemptions policy will help the military retain combat-ready pilots, which is a priority, particularly in times of national emergency.

On September 10, 2002, the FAA published a summary of the petition in the Federal Register seeking public comment for a period of 2 weeks. On October 2, 2002, a more detailed summary of the petition was published in the Federal Register and the comment

period was extended to October 14, 2002. The FAA also received correspondence from Mr. Bothwell concerning a number of administrative matters, including a dispute as to the second summary of the petition published on October 2, 2002. Mr. Bothwell was concerned that the summary of the petition that he provided was not published in the Federal Register.

The second summary of the petition published in the Federal Register on October 2, 2002, more accurately described the petition than the summary Mr. Bothwell provided. The published summary paraphrased and quoted from the petition that Mr. Bothwell filed. Mr. Bothwell has not demonstrated how not using his summary has in any way affected public notice of the petition. In addition, the entire petition filed, along with every comment submitted, has been and is available to the public online. The Web address for the online version of the petition was included in both notices in the Federal Register. The FAA received over 6,700 comments. Finally, the FAA is not required to publish the summary of a petition for exemption submitted by a petitioner or his or her representative, pursuant to 14 C.F.R. § 11.81(f). Mr. Bothwell's summary of the petition was conclusory and it was the FAA's position that publishing his summary could have misled the public to believe the FAA was admitting to the allegations in the petition.

Summary of Comments:

The overwhelming majority of commenters favor retaining the current Age 60 rule. Safety and medical issues were most often cited as the reasons for retention of the current rule. Numerous commenters stated there is medical information to support the Age 60 rule and before any change is considered, there needs to be extensive medical study in this area to prove that a change is warranted. Safety concerns of commenters included concern over irregular hours and long hours that take a toll on any pilot and many younger pilots and check airman stated they observed fatigue and a deterioration of mental skills and snap judgment in pilots close to age 60. In addition, some commenters stated since safety is the paramount consideration and the public does not choose which pilot flies their aircraft, the FAA should keep the Age 60 rule for the benefit of the general public. Some commenters advised that many pilots encounter serious medical problems soon after retirement due to airline pilot job stresses and evidence of this is in the sick leave records of flight engineers over the age of 60.

The vast majority of comments received for this petition for exemption did not address the medical condition of these ten petitioners. Instead they commented on whether the FAA should keep, remove, or withdraw the Age 60 rule. Comments were solicited to provide the public an opportunity to comment on the petition and to receive information as to whether these ten individual petitioners should be granted an exemption from 14 CFR § 121.383(c).

Many commenters stated they either support or oppose the FAA granting of an exemption to the ten petitioners. However, few commenters provided specific substantive information

concerning the ten petitioners to assist the FAA in deciding if these ten petitioners should be granted an exemption to the Age 60 rule.

Many commenters stated changing the rule to bring back older pilots would not make economic sense given the financial troubles of airlines. Some commenters stated the public is focused on the safety of flight after the events of September 11, 2001, and permitting older pilots to fly in Part 121 operations would give the public one less reason to fly. Many commenters stated changing the Age 60 rule would disrupt the retirement plans of many airline pilots that are based on the age of 60.

Many commenters do not believe the Age 60 rule is discriminatory, they believe safety overrides any discrimination. Some commenters also pointed out that there are minimum age requirements to become an airline pilot and that the FAA must choose some retirement age and age 60 is as good as any other.

A vast number of pilots commented that there is no shortage of pilots given that many thousands of pilots have been furloughed since the events of September 11, 2001. Many furloughed pilots pleaded that the FAA not change the Age 60 rule, because increasing the age above 60 would delay any chance they have at getting back their airline pilot job.

Many commenters stated that the vast majority of pilots and airlines are in favor of the Age 60 rule. Commenters also stated that petitions such as the one considered here originate from a vocal minority within the pilot community that understood the retirement system when they were hired by an airline but failed to plan their retirement accordingly and now seek to change the rule for the minority's financial gain, not for safety.

Commenters that support changing the Age 60 rule most often cited economics as the basis for the Age 60 rule. Some commenters stated the Age 60 rule is based on economics as a favor to the airlines, terminating the most senior and expensive pilot salaries. Some commenters stated they or pilots they know are experiencing financial difficulty because of the rule and they should be able to work as a pilot in Part 121 operations to the traditional social security retirement age of 65.

Commenters stated airline flights are less safe without older pilots because older pilots are more experienced and are sharper than younger, less safe pilots. Also, some commenters argue medical checks can weed out unsafe pilots. Finally, some commenters stated safety cannot be the basis of the rule because many other countries permit airline pilots to fly beyond age 60.

Some commenters argued the Age 60 rule is age discrimination. Some commenters stated the Age 60 rule violates U.S. age discrimination laws and it is ironic that the Government that adopts age discrimination laws also practices such discrimination.

Some commenters who are pilots argued that the Age 60 rule should be abolished because there is currently a shortage of pilots in the airline industry, including a shortage of pilots in certain regions.

The Southwest Airlines Pilots' Association (SWAPA) commented that the petition for exemption should be granted because the Age 60 rule is discriminatory and refuted by medical research. SWAPA also commented that there is no credible evidence to support the Age 60 rule and physicals and simulator checks are adequate to screen at-risk pilots.

The Air Line Pilots Association, International (ALPA) commented that the petition should be summarily denied because the petition does not meet the requirements the FAA adopted in the 1995 Disposition of Comments. ALPA commented that the Age 60 rule has been thoroughly studied, and repeatedly reaffirmed by the FAA and Federal Courts of Appeals. ALPA also commented that the petition offers no basis for reconsidering the Age rule, that each point in the petition has been addressed and rejected on repeated occasions. In regard to the origin of the Age 60 rule, ALPA commented that the FAA has reviewed the rule three times, finding each time the rule is well-founded, and the FAA's findings were upheld each time by a Federal Court of Appeals. ALPA commented that the petition offers no evidence to support the claim that the Age 60 rule is maintained as a favor to airline executives. ALPA commented that the FAA has devoted a substantial amount of time and resources to the Age 60 rule, and the FAA has conducted a significant amount of research concerning the Age 60 rule. ALPA commented that there is no evidence that authors of accident studies intentionally skewed results to support the Age 60 rule and that two appellate courts rejected criticisms of FAA use of the Golaszewski study. ALPA commented that the petition's allegation that the 1981 National Institute on Aging Panel Report disproved the medical justification is not true, the report recommended retaining the Age 60 rule and extending the rule to Part 135 operations. ALPA commented that sudden pilot incapacitation and subtle cognitive impairment are topics the FAA have found to be a safety risk and ALPA agrees with the agency's conclusions. Also, ALPA stated that performance and medical checks do not adequately screen at-risk pilots as the petition argues. ALPA commented that the FAA found that the Age 60 rule does not violate the Age Discrimination in Employment Act and the United States Court of Appeals for the District of Columbia Circuit upheld that decision. ALPA also commented that there currently is no shortage of pilots for Part 121 operations, in fact as of September 30, 2002, 5,000 pilots represented by ALPA were furloughed.

The Professional Pilots Federation commented that the origin of the Age 60 rule stems from ex parte contacts between a former administrator and an airline chief executive officer. They state there is no independent study that they are aware of that states some retirement age is necessary.

Wright State University commented that more than three dozen countries allow airline pilots to fly past Age 60, which they state contributes to air safety. The university also states that life expectancy in the United States has increased since the rule was enacted and, therefore, the public and pilots are living longer.

The Federal Education Association, Inc. commented that it could see no basis for requiring retirement at the age of 60. It also commented that pilots over the age of 60 are permitted to fly into the U.S. while United States pilots cannot.

The American Association of Retired Persons commented that the FAA continues to adhere to a rule that was adopted in 1959 to insure the highest level of safety despite over 40 years of medical and technological developments and a growing trend among foreign aviation authorities to allow pilots over age 60 to fly. It also commented that the FAA has yet to attempt to obtain medical or performance data on older pilots while claiming such data is needed before any change to the rule can be considered.

Finally, hundreds of commenters just simply stated they are for or against a change to the rule, with no explanation of why the rule should remain or be changed.

A brief history of the Age 60 rule:

The "Age 60 Rule" was adopted by the FAA in 1959 (24 FR 9767, December 5, 1959). The history and basis of the rule are set out in detail in a Disposition of comments and notice of agency decisions, 60 FR 65977 (December 20, 1995), corrected, 61 FR 24533 (May 15, 1996). Since adoption, the basis of the rule has been upheld in at least three cases, *see* PPF v. FAA, 118 F.3d 758 (D.C. Cir. 1997); O'Donnel v. Shaffer, 491 F.2d 59 (D.C. Cir. 1974); Air Line Pilots Association International v. Quesada, 276 F.2d 892 (2nd Cir. 1960); and exemption petitions have been unsuccessful in at least eight cases, *see* Yetman v. Garvey, 261 F.3d 664 (7th Cir. 2001); PPF v. FAA, 118 F.3d 758 (D.C. Cir. 1997); Baker v. FAA, 917 F.2d 318 (7th Cir. 1990); Aman v. FAA, 856 F.2d 946 (7th Cir. 1988); Gray v. FAA, 594 F.2d 793 (10th Cir. 1979); Rombough v. FAA, 594 F.2d 893 (2nd Cir. 1979); Keating v. FAA, 610 F.2d 611 (9th Cir. 1979); Starr v. FAA, 589 F.2d 307 (7th Cir. 1978).

Congress has also had the opportunity to reevaluate the Age 60 rule during the past 43 years. For example, in February of 2001, a bill to increase the Age 60 rule to age 65 was referred to

the House Subcommittee on Aviation.[2] In March of 2001, a bill to increase the Age 60 rule to age 63 was drafted to be reported by the Senate Committee on Commerce, Science, and Transportation.[3] Neither of those two bills was enacted. In a 1997 appropriations bill, the National Transportation Safety Board was appropriated a specific sum of money to conduct a study of the Age 60 rule. When the bill was finally passed by Congress, however, an amendment was added prohibiting the NTSB from spending any appropriated money to study the rule.[4]

Also, in the 1995 Disposition of comments, the FAA decided to deny future Age 60 rule petitions for exemptions without first publishing the petition for comment if the petition does not contain a proposed technique to assess an individual pilot's abilities and risks of subtle and sudden incapacitation.[5] This process was upheld by the United States Court of Appeals for the District of Columbia Circuit.[6]

While the current petition does not contain a new proposed technique to assess an individual pilot's ability and risk of incapacitation, the petition presents a unique, albeit not new, challenge to the Age 60 rule, in the form of a petition for exemption, on which the FAA gave the public an opportunity to comment.

Petition for Exemption Standards:

Factors that the FAA considers when evaluating a petition for exemption include whether the petitioner can show why granting the exemption will be in the public interest, how the exemption would benefit the public as a whole, and why granting the exemption will not adversely affect safety, or how the exemption will provide a level of safety at least equal to that provided by the rule from which the petitioner seeks an exemption.[7] Moreover, Congress specified in subpart III of Part A to Subtitle VII to Title 49 of the U.S. Code that the Administrator may grant exemptions from FAA regulations if such exemptions are in the "public interest." *See* 49 U.S.C. § 44701(f). In setting forth criteria for the Administrator to carry out her duties under Subpart III of Part A to Subtitle VII of Title 49 of the U.S. Code, Congress required the consideration of several things to be in the "public interest." 49 U.S.C. § 40101(d). But of the several items listed for consideration of what the public interest is in any particular matter, Congress stated that "(1) assigning, maintaining, and enhancing safety and security [are]..the highest priorities in air commerce." 49 U.S.C. § 40101(d)(1).

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[2] *See* H.R. 448, 107th Congress.
[3] *See* S.361, 107th Congress.
[4] *See* Department of Transportation and Related Agencies Appropriations Bill, p177, Report 104-631, June 19, 1997; Department of Transportation and Related Agencies Appropriations Bill, p179, Report 104-325, July 19, 1996.
[5] *See* 60 FR 65980.
[6] *See* Yetman v. Garvey, 261 F.3d 664, 679 (7th Cir. 2001).
[7] *See* 14 C.F.R. § 11.81(d) and 11.81(e).

Thus, although there may be many things that are arguably in the "public interest," the Administrator is statutorily required to consider in any rulemaking action (including petitions for exemption from rules) the highest priority in air commerce is to assign, maintain, and enhance safety and security.

Petitioners have not met the standards for an exemption to the Age 60 rule under 49 U.S.C. §§ 40101(d)(1) and 44701(f) and 14 CFR § 11.81(d) and (e). Petitioners attack the basis of the rule instead of providing medical evidence as to each airman, scientific studies, or new scientific protocols that would justify an exemption. As the United States Court of Appeals for the Seventh Circuit stated in a case involving a petition for exemption, that included many of the same allegations attacking the Age 60 rule, the validity of the Age 60 Rule has already been affirmed.[8] In a petition for exemption, the petitioners bear the burden of showing that circumstances justify exemptions from the Age 60 rule, a heavy burden where daunting issues of public safety are implicated.[9]

Petitioners fail to present any facts that would justify an exemption to the Age 60 rule for these ten individuals. The only facts given concerning these petitioners are their names, birth dates, and addresses. Petitioners present no facts that uniquely qualify them for an exemption to the Age 60 rule as opposed to many similarly situated pilots. Without further medical information regarding these petitioners and without a medical protocol that can reliably predict which over age 60 pilot will experience detrimental age decrements, the petitioners have failed to present any evidence upon which an exemption might legitimately be based.

Instead of presenting information that would support an exemption from the rule, the petitioners challenge the basis of the Age 60 rule and the FAA's conduct in defending the rule. Such allegations do not meet the requirements for a petition for exemption. These allegations do not meet the requirements for a petition for rulemaking. The FAA is responding to the specious allegations petitioners raise regarding the FAA's conduct over the past 43 years defending the Age 60 rule.

The petition is denied because the petitioners failed to provide any information that supports an exemption from the rule.

FAA Response to Petitioners Allegations:

Petitioners allege that the agency has participated in an economic conspiracy to justify the Age 60 rule. These allegations are without merit. The allegations petitioners present in this

[8] Yetman, at 668-669; *See also*, ALPA v. Quesda, 276 F.2d 892, 898. The rule was first upheld when the Air Line Pilots Association claimed Administrator Quesada had no reasonable basis for exercising his judgment, the court held there is considerable support for the Administrator's action. *See id.*
[9] *Id.* at 669.

petition for exemption are not factually based; instead they are based on far-reaching theories, and are completely without merit. The petitioners present no significant new information that has not been presented in prior petitions for exemptions or petitions for rulemakings. In each proceeding, where these same arguments were raised, the FAA denied the petition and various U.S. Courts of Appeals upheld the FAA's denials. The Age 60 rule and the justifications for the rule have been subjected to repeated FAA review and judicial review over the entire 43-year history of the rule. Congress has had the opportunity to revisit the Age 60 rule. In addition, the FAA, other Federal agencies, and private institutions have conducted numerous studies to examine the Age 60 rule.

Allegations of favoritism in the adoption of the Age 60 rule were raised in earlier proceedings before the FAA and challenges to FAA determinations in three cases before two United States Courts of Appeal.[10] The basis of this assertion is a letter from C.R. Smith, president of American Airlines when the Age 60 rule was adopted in 1959, to Administrator Elwood Quesada, suggesting there must be some suitable age for mandatory airline pilot retirement.[11] This and other documents purportedly supporting this allegation have been submitted to the FAA and to U.S. Courts of Appeals in at least two different petitions for exemption from the age 60 rule.[12] In response, the FAA denied allegations of favoritism[13] and U.S. Courts of Appeals have refused to reconsider the validity of the Age 60 rule, upholding the rule in several cases for over 40 years.[14]

The FAA denies allegations of favoritism in regard to either the adoption of the Age 60 rule in 1959 or during its longstanding defense of the rule. At the time the rule was adopted, the FAA followed standard rulemaking procedures by giving the public an opportunity to comment on the proposed rule. Claims by petitioners that the Age 60 rule was adopted as a personal favor to the president of an airline company are completely without merit.

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[10] *See* Brief of Petitioners, page 23, United States Court of Appeals for the Seventh Circuit, Yetman v. Garvey, February 20, 2001.(Yetman Brief); Brief for Petitioners, page 4, United States Court of Appeals for the District of Columbia Circuit, Professional Pilots Federation, et.al., May 22, 1996. (PPF Brief); In the matter of Professional Pilots Federation, Jerry J. Fielding, and James C. Rosater, Petition for Writ of Mandamus, pages 7-8, United States Court of Appeals for the Seventh Circuit, November 25, 1994 (PPF Writ of Mandamus); Yetman Petition for Exemption, Docket no. FAA 2000-8016, p52-53 (Yetman petition); Comments of the Professional Pilots Federation on Proposed Rulemaking as it Relates to Age Limitations for Pilots, pages 2-3, Docket no. FAA-1995-28154-1531; Comment of Bert M. Yetman, Docket no. FAA-1995-27264.

[11] *See* Petition for Exemption, Dallas Butler et. al., Exhibit C, docket number FAA-2002-12501-1.

[12] *See* Yetman Brief Joint Appendix 87, 88; PPF Brief Joint Appendix 618.

[13] *See* Disposition of comments and notice of agency decisions, 60 FR 65984.

[14] *See* Yetman v. Garvey, 261 F.3d 664, 668-9 (7th Cir. 2001) stating the court is not reexamining the validity of the Age 60 Rule, as it was already affirmed in Starr v. FAA; PPF v. FAA, 118 F.3d 758, 770 finding the FAA's decision not to convene rulemaking to revise the Age 60 rule was not arbitrary and capricious; Aman v. FAA, 856 F.2d 946, 954 (7th Cir. 1988) stating that petitioners have not produced sufficient evidence of ex parte communications to meet the heavy burden required to overturn an agency action; Starr v. FAA, 589 F.2d 307, 309 (7th Cir. 1978) stating the court will not reexamine the validity of the Age 60 rule, as the rule has already been affirmed; O'Donnel v. Shaffer, 491 F.2d 59, 62-63 (D.C. cir. 1974); ALPA v. Quesada, 276 F.2d 892, 898 (2nd Cir. 1960).

There was nothing inappropriate in adopting the Age 60 rule as an operational restriction under section 601 of the 1958 Act as opposed to an airman certification provision under section 602 of the Act. There are many operational restrictions and requirements in part 121 that do not have a corresponding airman certification provision. That is because the level of safety required for part 121 operators is higher than other operations, and, thus, the tolerance for risk is lower. Although pilots who are 60 years of age or older may operate under other parts of the regulations (e.g. parts 91 and 135) such operations do not have to meet the more demanding safety requirements imposed on part 121 operators. The Age 60 rule was adopted as an operational rule because Age 60 carves out a limited restriction prohibiting airman from operating aircraft under part 121. An airman certification restriction would be an overly broad measure for this rule and would require revoking and reissuing an airman's certificate at age 60, a matter that is more appropriately handled as an operational restriction.

The petitioners' allegations that the FAA has refused to collect data concerning the Age 60 rule is simply untrue.. In addition, the FAA does not restrict the type of data it collects concerning the Age 60 rule. The FAA collects data neutrally, regardless of whether some claim certain data may support or undermine this rule. In the latest petition for exemption before the U.S. Court of Appeals for the Seventh Circuit, the court found "We find the FAA, in accordance with our directive [from a prior petition for exemption] has kept abreast of and considered new studies and medical technology."[15]

In fact, the FAA has posted four reports concerning Age 60 on its website, at the address: http://www.cami.jccbi.gov/aam-400A/AGC60/60_index.html. These reports were created in part in response to the U.S. Senate Committee on Appropriations order to study the Age 60 rule in a year 2000 appropriations bill. The first report is an extensive annotated bibliography of the Age 60 rule debate covering the years 1990 to 1999. The second report is a re-analysis of a 1999 Chicago Tribune Report that analyzed accident and incidents data from 1990 to 1999. The third report is an analysis of professional air transport pilot accident rates by age for the years 1988 to 1997. The fourth report is an analysis of professional ATP and commercial pilot accident rates by age for the years 1988 to 1997. Petitioners criticize the method of analysis used in the fourth report, however, the FAA conducted the study pursuant to the direction of the Appropriations Committee and the results of that study showed an increasing risk for pilots over the age of 60.

Petitioners also claim that the FAA intentionally misrepresented information concerning studies (including the Flight Time Study) that support the Age 60, this allegation is completely false. This same argument has been raised in a petition for exemption[16] and raised

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[15] Yetman v. Garvey, 261 F.3d at 678.

[16] *See* Yetman Petition for Exemption, Docket No. FAA-2000-8016 at page 3, stating "the FAA has pursued a course of deception for many years in order to retain a rule that cannot be justified medically or operationally.

in two challenges of FAA exemption denials before the U.S. Court of Appeals for the Seventh Circuit.[17] In both cases, the Seventh Circuit recognized that the Flight Time Study was not perfect, but ultimately upheld the FAA's decision to deny petitions for exemption and upheld the use of the Flight Time Study as substantial evidence supporting the validity of the Age 60 rule.[18]

In the latest case upholding of an FAA petition for exemption denial the court states:

> Petitioners have failed to explain how the *FAA's awareness* of the deficiencies in the Flight Time Study—incidentally, a fact that we were aware of in *Baker*—impacts our substantial evidence inquiry. Yetman at 677 (emphasis in original).

The issue of whether pilot incapacitation poses a risk to air carrier safety has also been repeatedly raised by petitioners[19] and examined by the FAA in prior petitions.[20] In prior petitions concerning Age 60, the FAA determined that both sudden and subtle incapacitation create risks to air safety and experience of older pilots do not compensate for lost faculties. Recently, the court in Yetman agreed with the FAA, finding that the petitioners in that case did not provide, as was their burden, strong evidence that the added experience of pilots 60 and over clearly neutralizes the danger of sudden incapacitation and deterioration of piloting skills associated with the aging process.[21] Petitioners evidence in the present petition is no less than a decade old, once again providing no new evidence to support their claims and certainly not meeting the standard described by the court in Yetman, as requiring strong evidence to support their claims.

The purpose of requiring safety systems and procedures such as multiple pilot crews and the Age 60 rule is to provide redundant safety measures, so that if one safety mechanism fails another is in place. However, some risk exists even with what appear to be redundant safety

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As one example, FAA sought to deceive the Court in Baker v. FAA, 917 F.2d 3 18 (7th Cir. 1990), by claiming in that litigation that the "Flight Time Study" justified the denial of exemptions, when it knew at that time that the study was hopelessly flawed and did not support any conclusion. Under recognized standards of administrative law, the exemptions should be granted." *See also Id.* at 40.

[17] *See* Yetman Brief for Petitioners pages 31, 32 stating "...FAA's Kenneth Chin has revealed that FAA knew from the start that the Flight Time Study had 'major data deficiencies' and could not be used 'to support any position' (J.A. 15), proving that it had been foisted upon the Court in a duplicitous agency effort to conceal its fatal defects (see J.A. 15, 359)."; Baker Brief for Petitioners pages 9-17 stating the FAA's reliance on the Flight Time Study to support the Age 60 rule is fatally flawed, and if the flaw is removed from the study, the study supports granting a petition for exemption.

[18] *See* Yetman, 261 F.3d at 676, 677; Baker, 917 F.2d at 322.

[19] *See* Yetman petition for exemption pp 19, 27 (65 FR 59496); PPF petition for rulemaking p13 (58 FR 46585).

[20] *See* Yetman denial pp 8-9, 19-20; PPF denial 60 FR 65983.

[21] *See* Yetman at 678.

mechanisms. Thus, although part 121 operations require the presence of at least two pilots, the safety benefit of having two pilots would be diminished if one of those pilots were age 60 or older. That's because there is a higher chance that the age 60 or older pilot will suffer an incapacitating event, including an insidious incapacitating event (not noticeable to other crewmembers) or might have a decrement in cognitive functioning or reaction times that would not be timely caught and corrected by the other pilot.

The petitioners claim that the FAA does not consider performance and medical checks to eliminate at-risk pilots when examining a petition for exemption. This claim is without merit. The FAA considered medical testing in recent petitions and found that the medical tests and protocols did not provide the same level of safety as the Age 60 rule and this finding was upheld by court decisions.[22] For instance, the Yetman petition for exemption proposed a medical protocol, albeit a protocol substantially similar to past protocols submitted to the FAA, that in the petitioners view could identify pilots medically qualified to operate airline pilot duties beyond age 60.[23] In a detailed analysis of petitioner's protocol, the FAA found the protocol did not provide a level of safety equal to the level of safety under the Age 60 rule.[24] In addition, the FAA found there continues to be cognitive disorders for which there are no diagnostic tools on which we can rely. Similarly, the FAA found the medical protocol submitted in the Aman and Baker petitions to be inadequate.[25] The courts in each case upheld the FAA decision.[26]

In the current petition, no medical protocol whatsoever was submitted; instead petitioners claim the FAA can diagnose and eliminate at-risk pilots through current first-class airmen medical examinations. However, the FAA and courts have held that first-class airmen medical examinations and any medical protocol so far submitted to the FAA are inadequate to screen at-risk-pilots and do not provide the same level of safety as the Age 60 rule. The courts have already spoken as to the FAA's analysis of protocols and the courts disagree with the petitioners.[27]

Petitioners claim that use of simulators can screen at-risk pilots has also been raised in recent petitions for exemption[28] and addressed by the FAA in denying those petitions.[29] As discussed in the FAA's denial of the Yetman petition:

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[22] *See* Yetman at 675-6; Yetman denial p17-18; Aman at 954; Aman denial p13;
[23] *See* Yetman petition p2.
[24] *See* Yetman denial p18.
[25] *See* Aman denial p13; Baker denial p32.
[26] *See* Yetman at 675-6;Aman at 954
[27] *See id.*
[28] *See* Yetman petition at pp 2, 22, 29; Aman petition at pp 3, 31-32.
[29] See Yetman denial at p20; Aman denial at p13-14.

> ...periodic proficiency and competency checks are intended to detect a pilot's performance deficiency and to correct those deficiencies before the pilot is returned to flight operations. These checks only verify the state of a pilot's performance at the time of the checks. They are not useful for detection of early or subclinical cognitive defects that may subtly degrade performance or which, in time, may progress to risks for errors in judgment or other actions that may jeopardize safety. The checks do not predict whether an individual pilot's performance will degrade at any time in the future with aging.

Yetman denial p20.

The FAA made the same finding in the 1995 Disposition of Comments[30] and the U.S. Courts of Appeals for the District of Columbia Circuit upheld the FAA's determination:

> We conclude that the FAA afforded adequate consideration to the alternative of individualized testing. The FAA explained that even state-of-the-art testing cannot screen out potentially risky pilots.

PPF v. FAA 118 F.3d at 674.

Nothing has been presented to the FAA in this petition which warrants the FAA altering its determination with regard to the use of simulators to screen at-risk pilots; simulators are a beneficial tool for testing a person's present piloting ability and identifying any current deficiencies in that person's piloting skills. However, the FAA found no evidence that simulators are an adequate screen to identify future pilot deficiencies including subtle insidious cognitive deterioration. Therefore, the use of a simulator as a medical screen would not be a thoroughly effective tool to identify current medical problems with an airman and would not be an effective tool to predict which older pilots will shortly manifest medical problems in flight. There is no dispute that older people have higher incidences of medical problems in general and higher incidences of insidious/subtle cognitive deficits than younger people.

Petitioners also claim the FAA did not enforce the Age 60 rule against foreign pilots flying into the United States; however, under FAA regulations there is no Age 60 rule in Part 129, the part that governs operations of foreign air carriers and foreign operators of U.S. registered aircraft. While the ICAO standard was not enforced at its inception, the policy at the time recognized the international ramifications of insisting on compliance with international operating requirements. In any event, the United States worked through the difficult complexities and has for quite some time now insisted on Age 60 compliance by part 129 operators of "large" aircraft in the United States.

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[30] *See* 1995 Disposition of Comments at 60 FR 65983-65984.

Petitioners once again raise a claim that the Age 60 rule violates the ADEA, even though the FAA has successfully defended the rule on that basis twice, having one U.S. Courts of Appeals hold that the ADEA does not apply to the FAA and another court recognize that holding.[31] Petitioners attempt to distinguish this claim from past claims by arguing that the Age 60 rule has no safety basis and therefore is inherently discriminatory. That claim is inconsistent with case law and findings made in cases where the PPF itself was a party.[32] As case law holds, the ADEA does not apply to the Age 60 rule. Congress has had the opportunity to revisit both the Age 60 dispute and the ADEA after these significant decisions. Congress has not seen fit to amend the ADEA in any way that would nullify the FAA's
Age 60 rule.

Finally, petitioners claim that currently there is a pilot shortage, which may affect the war against terrorism because military pilots are leaving the military to join airline companies, is not true. Currently there is no shortage of airline pilots, in fact, airlines are furloughing thousands of pilots in response to the economic and travel industry slump since the events of September 11, 2001. Evidence of these furloughs lies in the number of airline pilots who commented on this petition stating they did not want the Age 60 rule to be changed because they and many of their colleagues are furloughed. Thousands of furloughed pilots submitted comments of this nature. In addition, the Air Line Pilots Association (ALPA) comment to this docket stated that 5,000 of the 65,000 pilots represented by ALPA are on furlough.[33]

In addition, as in past petitions that raise this same argument, the FAA notes that changing the Age 60 rule would not have an impact on the number of pilots leaving military service or the number of pilots in the airline industry.

In consideration of the foregoing, I find that a grant of exemption would not be in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. §§ 40113 and 44701, delegated to me by the Administrator, the petition of Butler, Dallas E. et al for an

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[31] *See* PPF denial at 60 FR at 65985 stating "The FAA agrees that limitations based on age are to be avoided if possible. However, safety in air transportation is paramount. As discussed above, the FAA has not found a way to acceptably evaluate the inevitable deterioration that occurs with age. Considering that the consequences of a pilot's subtle or sudden incapacitation potentially are so severe, the FAA has determined that at this time safety requires the Age 60 Rule to remain unchanged."; Yetman denial at p27 stating "While the ADEA does not apply to the FAA's regulation of pilots, PPF, 118 F.3rd at 770, the FAA does take cognizance that no group of people should be treated differently than others unless there is a valid reason for doing so. As discussed above, the FAA has determined that there are important safety considerations that lead the FAA to denying the petition for exemption."; PPF v. FAA at 762-763; Yetman v. FAA at 668, FN1, recognizing the PPF decision finding the ADEA does not apply to the FAA.

[32] We note that while the PPF is not listed on the petition for exemption the FAA received on June 13, 2002, the petition is located on the PPF website with PPF letterhead and the attorney representing these ten petitioners signs his correspondence with the FAA as "Attorney for the Professional Pilots Federation."

[33] *See* Comments of the Air Line Pilots Association, International, p18-19, docket no. FAA-2002-12501-6622.

exemption from 14 CFR § 121.383(c) is hereby denied.

Issued in Washington, DC, on October 6, 2003.

John M. Allen
Acting Director, Flight Standards Service

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Age60Rule.com

a non-profit educational research resource

February 17, 2003

Marion C. Blakey, Administrator
Federal Aviation Administration
800 Independence Ave, S.W.
Washington, D.C., 20591

CERTIFIED MAIL, RETURN RECEIPT

Dear Administrator Blakey,

This is a request under the Freedom of Information Act.

I request that copies of the below identified documents that are, or may be, in the possession or under the control of the FAA be provided to me as required by the Freedom of Information Act:

1. the full FAA response to a Senate Appropriation's Committee query posed during hearings on agency funding for the fiscal year ending September 30, 2000, as referenced on pages 79-80 of S-106-55, attached (highlight #1);
2. all documents/memoranda generated by Appropriations or FAA -- or both together -- describing/memorializing the origin and evolution of the risk analysis/comparison protocol described on page 80 of S-106-55, attached (highlight #2);
3. all correspondence or memoranda between the FAA and the Committee related to the removal of the due date and appropriated funds restrictions that appear on page 80 of S-106-55, attached (highlight #3);
4. all other materials related to the origin, establishment, execution -- including interim progress reports, if any -- and final approval(s) for each of the four reports produced under FAA-Civil Aeromedical Institute OAM research task AAM-00-A-HRR-520, including:

   description of the scope/objective(s) of the work to be performed under this research task, and any, if any, restrictions thereon,

   documents regarding the selection and assignment of key personnel, including those of technical supervisor(s) and of principal investigator(s)/author(s),

   all cost data, including initial cost estimates, cost limitations (if any), final cost determinations, and account number(s) to which these dollars were charged, and

all documents -- including those of purpose, scope, and cost -- relating to the initiation and approval for D. Broach to "present" an extract of "Report 4" at the annual meeting of the Aerospace Medical Association, Reno, NV, May 6-10, 2001; and

5. the "cover" and/or other transmittal correspondence/documents accompanying the completed study/studies when submitted to Appropriations by the FAA.

Copies of the studies, themselves, are not requested as they are available on-line.

I request a waiver of all fees for this request. Disclosure of the requested information to me as webmaster of Age60Rule.com is in the public interest because it is likely to contribute significantly to public understanding of the operations or activities of the Federal Aviation Administration and is not for any commercial interest.

In order to help determine my status to assess fees, you should know that I do not seek this information for, and will not use it for, any commercial use. I am a long-time researcher of the regulatory, legal, and factual history of the FAA's age 60 rule. I publish the results of this research on a totally free access, non-profit research resource web site that I host -- at my own expense -- www.age60rule.com. An extract from this web site's policy statement reads:

> www.age60rule.com is a free access, annotated archive of documents related to the Age 60 Rule and aging pilot issues. Access is free, everything posted here is available for downloading; again for free; ... Hard copies of any article appearing here will be provided for actual cost of reproduction and postage. Evidence of authenticity or origin is provided for most documents online, and, where not, will be provided from my records on request. Some of the materials I have, myself, created are copyrighted, but unless otherwise noted, permission to quote therefrom is granted freely, and I only request, but do not demand credit.

The full policy statement is available on-line. This non-profit educational research web site has been in existence for over two years, and appears on the first page of a "google" search initiated under the query "age 60 rule."

The studies the FAA produced in response to the Appropriation Committee's order and FAA-Civil Aeromedical Institute OAM research task AAM-00-A-HRR-520 are significant pieces of the history and rationale underlying the FAA's 40-plus year discussion and defense of its age 60 rule. The documents that I've requested will aid both the general public and the serious researcher by exposing the four studies' strengths and weaknesses, and by placing them in both historical and technical context.

This request is not dependent upon your waiving the fees, however. If the fee waiver is denied, to save time and subject to later appeal, I agree in advance to pay up to $100 for the requested documents. If you do not waive the fees, and anticipate that the costs will exceed this $100, please contact me by phone, fax, or e-mail for further instructions. Whether the fees are waived or not, your response within ten working days will be appreciated.

Thank you for your cooperation and interest in this matter.

Sincerely,

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Attach: S-106-55, pp. 79, 80.

U.S. Department
of Transportation
**Federal Aviation
Administration**

Civil Aerospace
Medical Institute

P.O. Box 25082
Oklahoma City, Oklahoma 73125

JUN 19 2003

Mr. Samuel D. Woolsey
14 Creekwood Court
Danville, CA 94526

Dear Mr. Woolsey:

Freedom of Information Act Request #2003-003949CA

This is in response to your request of February 17, 2003, which arrived in this office on March 5, 2003, under the terms of the Freedom of Information Act (FOIA), 5 U.S.C. 552, requesting the following:

1. the full FAA response to a Senate Appropriation's Committee query posed during hearings on agency funding for the fiscal year ending September 30, 2000, as referenced on pages 79-80 of S-106-55, attached (highlight #1);
2. all documents/memoranda generated by Appropriations or FAA – or both together – describing/memorializing the origin and evolution of the risk analysis/comparison protocol described on page 80 of S-106-55, attached (highlight #2);
3. all correspondence or memoranda between the FAA and the Committee related to the removal of the due date and appropriated funds restrictions that appear on page 80 of S-106-55, attached (highlight#3);
4. all other materials related to the origin, establishment, execution – including interim progress reports, if any – and final approval(s) for each of the four reports produced under FAA-Civil Aeromedical Institute OAM research task AAM-00-A-HRR-520, including:
   (a) description of the scope/objective(s) of the work to be performed under this research task, and any, if any, restrictions thereon,
   (b) documents regarding the selection and assignment of key personnel, including those of technical supervisor(s) and of principal investigator(s)/author(s),
   (c) all cost data, including initial cost estimates, cost limitations (if any), final cost determinations, and account number(s) to which these dollars were charged, and
   (d) all documents – including those of purpose, scope, and cost – relating to the initiation and approval for D. Broach to "present" an extract of "Report 4" at the annual meeting of the Aerospace Medical Association, Reno, NV, May 6-10, 2001; and
5. the "cover" and/or other transmittal correspondence/documents accompanying the completed study/studies when submitted to Appropriations by the FAA.

A records search was conducted in the Civil Aerospace Medical Institute (CAMI) and revealed the following:

1. CAMI has no records.

2. CAMI has no records, documents, or memoranda describing or memorializing the origin and evolution of the risk analysis/comparison presented by Senate Report 106-55.

3. CAMI has no records. A records search was also conducted by the Office of Budget (ABU), the Office of Government and Industry Affairs (AGI), the Associate Administrator for Regulation and Certification (AVR), and the Office of Aerospace Medicine (AAM) (all located in Washington, DC), and no records were located.

4. CAMI has no documents or records beyond those available from the Office of Government Affairs (AGI) in response to requests number 1 and 2 related to the origin and establishment of the four research studies resulting in the four Age 60 reports. There were no interim reports in connection with the research. The reports themselves describe the procedures, analysis, and outcomes in sufficient detail to recreate the studies in accordance with generally accepted scientific practice. The agency records pertaining to the execution of the three empirical studies (Study 2, 3, and 4) consist of the statistical command syntax, statistical output, and source data files used by the researcher(s)/author(s) in the course of the research. Copies of those files are provided in electronic form on the enclosed CD-ROM. Personal identifiers in the accident, certificate, and medical source data files have been redacted to protect the privacy of individual pilots.

   (a): A copy of the Aeromedical Research Resume (ARR) for the OAM research task AM-00-A-HRR-520 is provided. The ARR describes the scope, objectives, and tasks performed under research task HRR-520. The focus of that research task was on flight deck human factors. The Congressional requirement for a study of accident rates in relation to pilot age fell within the overall scope of the research task and was treated as a pop-up activity. The Age 60 studies were formulated after the ARR was prepared.

   (b): There is no documentation regarding the selection of the individuals involved in the 4 investigations. Decisions were made following discussions with the CAMI director on basis of the task requirements and expertise.

   (c) The research studies were accomplished as a part of the day-to-day activities of the involved scientists. Since each of the authors was a government employee and involved in several projects during the course of the year there was no separate cost accounting for the Congressional task.

   (d) The documents requested pertain to routine personnel actions for the approval and payment of travel for a federal employee and pertain solely to the internal practice of the agency for request, approval, and payment of official travel. They are therefore exempt from disclosure under FOIA.

   The procedures followed for gaining approval for presentation of the results of the Part 4 study were identical to those involving other presentations by CAMI employees. This meant that the abstract had to be submitted for review at CAMI and FAA Headquarters prior to submission for review by the AsMA scientific program committee. Following AsMA approval for presentation at the meeting the author prepared the presentation materials. Those materials are then submitted for review and approval at CAMI and FAA Headquarters. Following approval, the author is allowed to submit travel orders to attend and make the presentation. A copy of the approval for presentation of the report is enclosed.

5. Same as #1

Your request for a waiver of fees was granted.

The undersigned is responsible for the above-described determination. You may request reconsideration of this response by writing the Assistant Administrator for Region and Center Operations (ARC-1), Federal Aviation Administration, 800 Independence Ave., SW., Washington, DC 20591. Your request for reconsideration must be made in writing within 30 days from the date of receipt of this letter and must include all information and arguments relied upon. Your letter must state that it is an appeal from the above-described denial of a request made under the FOIA and include your assigned FOIA conrol number. The envelope containing the appeal should be marked "FOIA."

If we can be of further service, please let us know.

Sincerely,

Melchor J. Antuñano, M.D.
Director, Civil Aerospace Medical Institute

Enclosures

U.S. Department of
Federal Aviation Administration

Aeromedical Research Resume
Research Project Description Subtask for FY00

1. Title:	2. Sponsoring Organization/Focal Point (FP)	3. Originator Name, Organization, Phone : AAM-510 (405) 954-6828
General Aviation Human Factors Research Program: Performance Assessment Tools and Training Systems	AIR-3; N. Lane AAI-1; B. Donner AAM-1; J. Jordan, M.D. ACE-110; M. Dahl AFS-400; R. Wright AFS-800; M. Henry AAR-100; R. Simmons	Thomas E. Nesthus, Ph. D. Dennis B. Beringer, Ph.D. Kevin W. Williams, Ph.D. Kurt Joseph, M.S.
		4. Origination Date: July 1999
5. Parent RPI Number: Flight Deck Human Factors	6. Subtask Number: AM-A-00-HRR-520	7. Completion Date: September 2002
8. Parent MNS: 187	9. RPI Manager Name, Organization, Phone: David J. Schroeder, Ph.D. AAM-500, FAA Civil Aeromedical Institute (405) 954-6825	

10. Research Objective(s):

This ARR concerns an approach to providing a scientific basis for the FAA and the GA industry to ascertain and develop initiatives that will result in the improvement in general aviation safety. Specifically, the research tasks of this ARR are designed to: (1) define and describe the capabilities and limitations of the average General Aviation Pilot, (2) evaluate selected intervention strategies, as identified by the Weather and CFIT Joint Safety Implementation Teams (JSIT), as well as strategies for reducing stall-related incidents/accidents, (3) examine the long-term effectiveness of PCATDs and other aviation training devices, (4) analyze human-factors-related causes of aviation accidents and incidents, (5) assess the impact of aviation stressors, including fatigue, on pilot performance under specified flight conditions and levels of pilot training/experience, (6) the development of specialized assessment procedures and questionnaire probes for providing baseline data on safety-related issues, training, and pilot performance, and (7) provide support for the development of advisory circulars and other informational materials for educational purposes.

11. Technical Summary:

This ARR includes a multi-task approach to meeting the research objectives noted above. Many of these tasks will involve laboratory research and simulation to investigate specific factors and conditions, which are felt to impact GA pilot performance. Other tasks will require database analyses and survey-style inquiries. The primary research tools in conducting the simulator-based research will be CAMI's two GA flight simulators: the Advanced General Aviation Research Simulator (AGARS) and the Basic General Aviation Research Simulator (BGARS). Research protocols, scenarios, and flight regimes will be configured to emulate the flight environment critical to the human factors research question under study.
Recommendations are to be provided based on empirical pilot performance data obtained from high-fidelity real-time simulation. Wherever appropriate, pilot-subject response data will be presented in the form of probability functions, performance curves, and other graphic and probabilistic data presentation, which will support Agency actions. Human engineering design and/or instructional system design recommendations will be offered to improve the pilot-aircraft system interface, mitigate pilot error, expedite training, and enhance flight safety.

12. Resources Requirements:	FY-00	FY-01	FY-02
FAA Staff Years	5.0	5.0	5.0

13. Description of Work:

(1) Brief Background

This ARR has components from earlier ARRs in which the effects of environmental stressors and fatigue were examined for their impact on pilot performance. Contributions were and continue to be made to developing certification criteria for pilots and for aircraft as well as operating rules for aircraft systems, and determining the training effectiveness of PCATDs for purposes of approval of training devices and curricula. Continuing support (system development and testing & evaluation) for the AGATE program (training) and the follow-on SATS program is provided within the tasks in this ARR.

(2) Statement of Work

This is a multiple-task ARR and includes tasks with several component phases or stages where there is a transition of attention to follow-on issues and problems as a function of the degree of success of earlier efforts. Components of tasks that were completed under a previous ARR are noted. Several new tasks have been identified in coordination with AIR, including assessing causes of human error in accidents and defining standardized human/system performance criteria for pilot and aircraft certification.

General Hypothesis: that analyses of pilot abilities and accident causal factors can be used to identify areas for key interventions using various technologies and procedures, these interventions then producing statistically significant gains in one or more measures of pilot performance and contributing significantly to accident/incident reduction.

Task 1 – General Aviation Pilot Demographics.

Studies of GA pilots' responses to autopilot failures and malfunctions included in an earlier ARR indicated that criteria used for the certification of some aircraft systems did not necessarily match the performance capabilities of average GA pilots. These criteria were somewhat "optimistic" regarding the responses that one could expect of this pilot population, and thus some of the pilots were necessarily put at risk when called upon to respond to system failures or malfunctions, despite the fact that these systems could be said to be certification compliant. This task will examine, in the form of meta analyses and strategic sampling where necessary, the performance capabilities and limitations of the *average* General Aviation pilot. These data will then be used to produce recommendations for the design and certification of both aircraft systems and of pilots such that these recommendations accurately take into account not only the best possible expected performance but also the worst possible expected performance given the licensing and currency criteria used today.

Task 2 Evaluation of selected intervention strategies for Weather/CFIT-related and stall incidents/accidents.

Recommendations provided by the Joint Safety Analysis Teams for GA Weather and CFIT accidents are currently under review by Joint Safety Implementation Teams. A selection of the intervention strategies considered by the JSITs as top candidates for implementation will define the empirical work of this task. For example, a strategy for enhancing the quality and dissemination of GA weather information for pre-flight planning could be evaluated in two parts. Part (a), Create a protocol for a GA weather decision-making simulation, to systematically test and evaluate GA pilots' use of pre-flight weather information contained in several, currently available formats (e.g., DUATS, FSS Standard Briefing, and Graphical Weather Products). Weather information will be provided such that pilots receive equivalent information irrespective of the format used. The protocol also will evaluate formats and procedures used to provide in-flight weather briefings to GA pilots.

Measures will be developed to assess pilot comprehension of pre-flight and in-flight briefings, tactical and strategic weather decision-making, and flight performance. Strategic decision making will be evaluated by analyzing pilot responses to questions derived from pre-flight briefing material, whereas tactical decision making will be evaluated by analyzing pilot responses to material presented during in-flight weather briefings.

Part (b), Conduct a GA weather decision-making simulation, to collect empirical data using pilot comprehension, decision making, and performance measures. Analyze data to evaluate formats and procedures for obtaining pre- and in-flight weather information. Complete a technical report using analysis of empirical data and provide recommendations for improving formats and procedures used to obtain weather information. Recommendations for disseminating graphical weather information to the cockpit should be sensitive to weather products and services currently being developed for the FAA Flight Information Services (FIS) program.

Task 3 - Long-term training effectiveness of PCATDs and other Aviation Training Devices

The use of PC-based Aviation Training Devices (PCATDs) has been approved via Advisory Circular 61-126 as an acceptable means of providing some of the training required for an instrument rating. It has been demonstrated, however, that a major problem exists among pilots regarding the effective retention of flying skills in the time following initial certification. Research has indicated that spaced instructional interventions can be used to maintain flight skills and that those skills that deteriorate most rapidly are generally procedural in nature. Currently sponsored research with the University of Illinois Institute of Aviation is evaluating the possible use of affordable simulation to provide some of these instructional interventions. The research results will have the benefit of increasing the availability of instrument flight practice, decreasing the cost of the associated training, and reducing the hazard exposure of both the trainee and other individuals in the nearby environment. The research involves the comparison of four groups of pilots over time to determine the effectiveness of different training/recurrency interventions: a control group with no practice or instrument flying between pretest and posttest, a second control group that practices in the aircraft, an experimental group receiving practice on a PC-based device (one approved for use in instrument training), and an experimental group receiving practice time in a conventional aviation training device. Performance is being assessed for 12 flight tasks and will be correlated with flight training experience and currency variables. Results will be used to recommend appropriate use of the PCATD in the maintenance of instrument flying skills. In addition, as an adjunct to the current research, a study will be made of the effectiveness, reliability, and validity of the use of a GPS-based airborne recording system for the objective measurement of pilot performance during instrument maneuvers. This system will avoid the limitations of subjective evaluations of instructor pilots and will build on previously sponsored research. Research on PCATD effectiveness was initiated in FY98 and will continue through FY00. Efforts will be initiated to expand this research to assess the efficacy of selective aviation training devices.

Task 4 – Human Factors Analyses of Aviation Accidents.

Overall objectives of this tasking are to provide a better methodology for acquiring, recording, and analyzing the human factors aspects of aircraft accidents (including General Aviation). Accurate information concerning human factors provides aeromedical researchers and operational field management with critical trend information necessary for the development of accident prevention programs. Such a program, would reach the aviation community through pilot training materials, Advisory Circulars, and/or changes in the Federal Aviation Regulations based on accident data.

Application of the Human Factors Analysis and Classification System (HFACS) to Department of Defense (DoD) aircraft accidents, has afforded the ability to develop objective, data-driven intervention strategies. HFACS provides a model or framework for understanding the "big picture," it highlights important human factors safety issues and their interrelationships, and helps target the need for specific intervention strategies.

The framework has also been used to develop innovative accident investigation methods that have enhanced both the quantity and quality of the human factors information gathered during accident investigations. Recent JSAT efforts in the analysis of general aviation CFIT and Wx-related accidents have underscored difficulties in data analysis due, primarily to a lack of data.

Tasks associated with this project include application of the HFACS taxonomy to a sampling of civil aviation accidents (Parts 121, 135, 91 and rotorcraft) in an effort to verify the NASA Langley Reseach Center's Aviation Safety Analysis and Functionality Evaluation (ASAFE) tool, development of a field investigator's HFACS-checklist, and eventually, the development of an electronic field investigation tool. This task will be done in collaboration with the University of Illinois Institute of Aviation.

Task 5 – Fatigue in General Aviation and Regional Carrier flying.

Part (a): General Aviation. Fatigue in Single Pilot Business Flying (AGARS). The Piper Malibu configuration of the AGARS will be used to simulate a high-performance, single engine aircraft platform to measure levels of fatigue and loss of alertness induced by a pilot/business person's day. The protocol will involve approximately a 12-hour day in which the pilot departs home airport around 0700, flies a multi-hour mission to a meeting in another city, attends the meeting, and departs for a return-home flight at around 1700, arriving back at the home airport after the multi-hour return flight. Research objectives include (1) determining if significant fatigue effects and performance impairment are found as a result of the business flying protocol; (2) determining whether fatigue assessment methods developed earlier demonstrate a reliable sensitivity to the effects of fatigue in the simulation; and (3) determining whether real-time sensing of loss-of-alertness and fatigue effects based on the assessment methods is feasible and whether an alerting provision might effectively stimulate the pilot to take appropriate countermeasures. The results of this study will (1) indicate the degree of impairment in pilot performance as a result of long, business flying days, and (2) provide guidance in how to design and use real-time sensing devices for protecting the pilot against performance impairment due to fatigue effects.

Part (b): Regional carrier and unscheduled Part 135. In 1995, 1,546 Part 135 regional aircraft flew 3,033,773 hours at a cost of 11 accidents with a rate of .43 accidents per 100,000 flight hours as compared to Part 121, where the accident rate was .27 per 100,000 flight hours. FAR Part 119, which applies the regulatory requirements of Part 121 to regional aircraft now operating under Part 135, created a higher safety standard by requiring changes in flight crew qualifications, cabin safety equipment and materials, airplane performance requirements, aircraft dispatching, and maintenance. However, the regional airline operational environment still differs from the operational environment of "long-haul" carriers, and these important differences seemingly affect regional airline safety, as is evidenced in the difference in accident rates. For example, regional airlines fly into smaller airports, spend proportionately more time in IMC conditions, encounter terminal area traffic densities more frequently, and fly a higher number of take-offs and landings per day. Fatigue issues pertaining to high workload, long workdays, and irregular, unpredictable schedules, as frequently involved in operations of regional airlines, will be investigated using appropriate fatigue and performance assessment methods in a simulated cockpit operational environment.

Further, level of pilot experience in regional airlines is, on average, less than that for Part 121 Pilots. In 1994, the NTSB reported that these factors might combine in an interactive fashion to increase the risk of critical mistakes that could jeopardize the safety of flight. Human factors research is needed that discerns the exact nature and effects of these factors on pilot performance, and identifies high-payoff approaches for reducing risk and managing uncertainty in regional airline operational environments. In particular, pilot-in-the-loop simulations of regional airline operational contexts can provide pilot performance data that meet these objectives. Such simulations would (1) address the impact of automation on crew task performance; (2) reveal the effects of mission duration and evolution on crew fatigue levels; (3) identify pilot error and strategies to mitigate such error; (4) allow for more optimal integration of the dispatcher function; (5) test fatigue countermeasures; (6) provide pilot performance data that complement current agency efforts to certify aircraft for use in supercooled large droplet (SLD) icing environments; (7) clarify the implications of "free flight" on the regional airline operational environment and pilot performance; and so forth.

Findings from the part (a) study of GA pilot fatigue will be employed in the design and conduct of this study. The primary research tool will be AGARS configured as a twin turboprop commuter aircraft. Objectives include (1) determining the level and onset of fatigue effects as a function of commuter airline missions; (2) testing the value of fatigue assessment methods employed in earlier studies; and (3) assessing the usefulness and cockpit practicality of real-time loss-of-alertness sensing instrumentation and efficacy of recommended aircrew countermeasures.

Decision making regarding the initiation of this task and establishment of milestones is dependent upon the outcome of pending rulemaking and additional review of requirements.

Task 6 - Development and implementation of specialized assessment procedures and questionnaire probes for enhancing performance.

FAA personnel involved in aviation regulation and certification provide a critical link with flight operations in determining the overall level of safety maintained within the National Airspace System (NAS). Optimal performance is determined in part by the overall quality of the selection and training programs, the procedures and the work tools available, as well as other aspects of the overall corporate climate. With NAS modernization there will be a need to develop new procedures and technological approaches to accomplishing various job tasks. Information can also be gathered from general aviation pilots and others regarding their perceptions of various changes. This research task is designed to develop specialized assessment procedures and questionnaire probes that will provide baseline data for assessing employee and pilot views of safety-related issues, training, and performance. That information will, in turn, be used to assess the effectiveness of new technologies and procedures in optimizing performance and enhancing the overall corporate culture, including information gathered as part of the biennial FAA employee attitude survey (EAS). Work has been ongoing related to the EAS, the Alaskan survey on CFIT based upon HFACS, and in support of technology-based transitions in the Aircraft Registry.

14. Intended End Products/Deliverables:

Efforts on this ARR will result in products which will be delivered through such media as advisory circulars (AC's); DOT/FAA/CAMI informational pamphlets distributed to the GA community; educational materials provided to FAA safety counselors for distribution and presentation; guidelines for certification and rule making; equipment design specifications provided to GA equipment manufacturers (most notably AGATE industry partners); general human engineering guidelines for the design and integration of GA cockpit instrumentation; and so forth. Results of scientific studies will be documented in technical reports and memoranda, reported to sponsors at project review meetings, with a selected number being presented at professional meetings and submitted for publication in the scientific literature.

Task 2: Intervention lists for CFIT/Weather-related, and stall incidents	
2.1 Create a protocol for GA Weather decision-making simulation	FY99 Q4
2.2 Test protocols and verify sensitivity of measures	FY00 Q1
2.3 Conduct GA Weather decision-making simulation	FY00 Q1
2.4 Data analysis	FY00 Q2
2.5 Submission of final report	FY00 Q3
Task 3: Long-term training effectiveness of PCATDs and other Aviation Training Devices	
3.1 Completion of PCATD effectiveness data collection (University of Illinois)	FY00 Q2
3.2 Development of plan for evaluation of aviation training devices	FY00 Q3
Task 4: Human Factors Analyses of Aviation Accidents	
4.1 Scheduled 121 & 135 (FY90-present) coded and analyzed (University of Illinois)	FY99 Q4
4.2 Literature review on HF accident investigation (University of Illinois)	FY00 Q1
4.3 Report completed for 121 & 135 data (University of Illinois)	FY00 Q2
4.4 Begin analysis of GA accidents	FY00 Q2
4.5 Electronic field investigation tool completed	FY00 Q4
4.6 Begin constructing relational database of causal factors	FY00 Q4
Task 5: Fatigue in General Aviation and Regional Carrier Flying	
5.1a Design Study	FY99 Q4
5.2a Develop supporting displays & simulation software	FY00 Q1
5.3a Collect/analyze data	FY00 Q2
5.4a Report findings; make recommendations	FY00 Q3
5.1b Identify future study requirements	TBD
Task 6: Development of specialized assessment tools	
6.1 Alaskan survey developed based upon HFACS	FY99 Q1
6.2 Alaskan survey mailed out	Completed
6.3 Alaskan survey data analyzed	FY99 Q2
6.4 Alaskan survey final report	Completed
6.5 Other specialized assessment tools as required	FY99 Q3
	Completed
	FY99 Q4
	Ongoing

16. Procurement Strategy/Acquisition Approach/Technology Transfer:

Technology transfer to the general aviation equipment and training communities will be accomplished through such organizations as GAMA, SAMA, AOPA, through the AGATE, and through circulars and other media to the GA pilot community. It is anticipated that additional hardware/software support will be required to upgrade AGARS in support of this specific research. Procurements to upgrade the device to fully support other aero model configurations and performance monitoring subsystems will cost an estimated $1OOK.

17. Justification/History:

NTSB civil aviation accident data for 1998 indicate that of the total of 2040 accidents (1995: 2,188), 1,907 or 93% were associated with general aviation (1995: 94%). Of the total number of accidents, 361 were fatal (1995: 438) with general aviation accounting for 96% (1995: 93%). Total fatalities for 1998 were 663 (1995: 961) with 621 or 94% attributable to general aviation (1995: 76%). Note that general aviation includes all aviation operations with the exception of air carrier and the military. (Information was taken from the NTSB Annual Review of Aircraft Accident Data, 1998 Preliminary Data.) General aviation, due to its relatively high accident and fatality rates, offers a potentially high return on investment of R&D resources because of the larger potential payoff in increased aviation safety from interventions that serve to reduce those rates.

It has been estimated that over 80% of the accidents noted above within the general aviation community can be attributed to some form of pilot error. GA pilot "errors" may be precipitated by any number of causal factors including inappropriate decision-making, poor judgment, inappropriate attitudes toward flying, lack of the necessary skill level required for a particular set of flying conditions, or lack of knowledge of weather, procedures, rules, or regulations. Such "errors" could also be due to impairment induced by fatigue, drugs, alcohol, stress, hypoxia, preoccupation, or other stressors. In addition to those potential causal factors, GA accidents and incidents can also be attributed to confusing navigational charts, poorly conceived airspace restrictions, lack of standardization between aircraft, poorly designed cockpit interfaces including controls and displays, confusing avionics input and output entries, and new technology to which the GA pilot must adapt. This ARR is dedicated to developing and testing interventions that will serve to reduce the root causes of GA pilot "errors" and thereby achieve a reduction of GA accidents and incidents. Some of these interventions will arise from the application of emerging technology through AGATE. Supporting justification for this project area also can be found in Public Law 100-591, the Aviation Safety Research Act of 1988, and the Federal Air Surgeon's Annual Program Guidance Policy Statement, 1992-1993 which supports research on pilot impact of recent changes in the cockpit environment and assessment of pilot attributes required to perform safety in current and future advanced cockpits. The National Plan for Civil Aviation Human Factors also stresses the urgency of fully integrated human factors research. These activities are also in response to the report of the Gore Commission and its call for interventions to reduce the aircraft accident rate, and are in support of the Safe Flight 2000 initiative.

18. Issues:

Human subjects will be used and, as such, each will be informed of the tasks to be required. No drugs or alcohol are to be used in the research. A description of the research protocol and subject consent form will be submitted to the FAA Institutional Review Board for approval. Support will also be provided for the "ATS concept of operations for the National airspace System in 2005."

19. Transition Strategy:

Transition of R&D findings from the ARR will be accomplished through existing FAA structures within the Flight Standards organization, Office of Accident Investigation, GA safety counselors, and Aircraft Certification. Recommendations will be provided regarding revisions to FAR's and issuance of advisory circulars. Other transitions will be accomplished through representation at GA industry expositions and technical meetings and through the NASA AGATE, SATS, and AWIN programs. Transition will also be facilitated by continued coordination with the General Aviation Coalition and participation with the four working groups currently operating within that organization.

20. Impact of Funding Deferral:

Deferred funding of this project would likely result in significant delays in understanding the contribution of the specified avionics devices and situations to aircraft accidents and incidents. This would translate into a continuance of general aviation accidents at an unabated rate (1,907 in 1998), many of which involve fatalities (361 in 1998), and the accompanying loss of life and property damage. One can not discount the indirect costs to society related to subsequent insurance claims, lost wages and productivity, and litigation as well as investigatory costs to the agency. Deferral would also significantly restrict or prohibit participation in the AGATE and SATS programs and compromise application of human factors standards and criteria to the developing avionics and control systems.

21. R&D Teaming Arrangements:

CAMI will collaborate with other federal laboratories and university research centers important to the accomplishment of the stated research objectives. In particular, coordination will be maintained with the NASA general aviation program currently being managed at NASA Langley. Continued coordination and participation will be maintained with the General Aviation Coalition composed of FAA-AFS, AOPA, GAMA, SAMA, EAA, and NBAA. The goals of this plan are shared by this ARR and include aviation safety, product innovation and competitiveness, air facilities capacity and access and affordability of innovations by the GA pilot community. Additional support for Tasks will be obtained through grants to the New Mexico State University, the University of Illinois Aviation Research Laboratory and other institutions. Teaming with CAMI's Aircraft Accident Research Team (AAM-600) will be pursued where appropriate.

22. Special Facility Requirements:

The General Aviation Flight Simulation Research Facility at CAMI including both AGARS and BGARS will be used in the performance of most experimental tasks.

23. Approvals (Signature Authority):	***Project Revalidation***	***Performing Organization***
Nancy Lane Special Assistant to the Director Aircraft Certification Service (AIR-3)	Date	William E. Collins, Ph.D. Director, FAA Civil Aeromedical Institute, AAM-3
Jon L. Jordan, M.D. Federal Air Surgeon, AAM-1	Date	Date